LIST OF PENDING CLAIMS

1. (Original) A method for regenerating optical signals comprising:

counter-propagating the optical signal and a continuous wavelength (CW) signal;

creating a chirped output signal having bits that correspond to the "1" bits in the optical signal; and

filtering signals to pass the chirped output signal and to block the CW signal.

2. (Original) The method of claim 1 wherein the counter-propagating is performed in a device that creates a transient chirp.

3. (Original) The method of claim 1 wherein the counter-propagating is performed in a semiconductor optical amplifier (SOA).

4. (Original) The method of claim 1 wherein the counter-propagating is performed in a device that creates an adiabatic chirp.

5. (Original) The method of claim 1 wherein the counter-propagating is performed in a electro-absorption modulator (EAM).

6. (Original) The method of claim 1 wherein the chirped output signal comprises regenerated bits from the optical signal.

7 (Original) The method of claim 1 wherein the chirped output signal comprises reshaped bits from the optical signal.

8. (Original) The method of claim 1 wherein the chirped output signal comprises re-amplified bits from the optical signal.

9. (Original) The method of claim 1 wherein the chirped output signal comprises resynchronized bits from the optical signal.

10. (Original) The method of claim 1 wherein the chirped output signal is at a same wavelength as the original optical signal.

11. (Original) The method of claim 1 wherein the chirped output signal is at a different wavelength than the original optical signal.

12. (Original) The method of claim 11 wherein the wavelength of the chirped output signal is selected by tuning the CW signal.

13. (Original) The method of claim 1 wherein the filter is a high pass filter

14. (Original) The method of claim 13 wherein the high pass filter has a frequency response approximating a step function.

15. (Original) The method of claim 1 wherein the filter is an interleaver.

16. (Original) The method of claim 1 further comprising:

simultaneously filtering a plurality of chirped output signals in an interleaver, wherein the plurality of chirped output signals each have a different wavelength.

17. (Original) A method for regenerating a plurality of optical signals comprising:

counter-propagating each of the optical signals with a separate continuous wavelength (CW) signal, wherein each of the separate CW signals has a different wavelength;

creating a separate chirped output signal for each of the plurality of the optical signals, wherein each chirped output signal has bits that correspond to the "1" bits in a corresponding optical signal; and

filtering signals to pass only the separate chirped output signals and to block the CW signals.

18. (Original) The method of claim 17 wherein the filtering is performed in a single interleaver.

19. (Original) The method of claim 17 wherein each of the optical signals and a corresponding CW signal is counter-propagating in a separate semi-conductor optical amplifier (SOA).

20. (Original) The method of claim 17 wherein the wavelengths of the separate chirped output signals are selected by tuning a corresponding CW signal.

21. (Original) The method of claim 17 wherein the wavelengths of the separate chirped output signals are tuned to a separate passband of the interleaver.

22. (Original) A system for regenerating optical signals comprising:

a semi-conductor optical amplifier (SOA) coupled to an input optical signal;

a continuous wavelength (CW) laser coupled to the SOA, wherein a CW signal from the laser and the input optical signal counter-propagate in the SOA in a cross-gain mode to generate an output signal; and

a filter coupled to the SOA and that passes the output signal and blocks the CW signal.

23. (Original) The system of claim 22 further comprising:

an optical circulator coupled between the SOA and the filter, wherein the optical circulator receives the input optical signal and directs the input optical signal to the SOA, and wherein the circulator passes the output signal from the SOA to the filter.

24. (Original) The system of claim 22 wherein the CW laser is tunable.

25. (Original) The system of claim 24 wherein the wavelength of the output signal is selectable by tuning the wavelength of the CW signal.

26. (Original) The system of claim 22 wherein the filter is a high pass filter.

27. (Original) The system of claim 22 wherein the high pass filter has a frequency response approximating a step function.

28. (Original) The system of claim 22 wherein the filter is an interleaver.

29. (Original) The system of claim 28 wherein the interleaver is coupled to multiple SOAs circuits.

30. (Original) The system of claim 22 wherein the output signal comprises "1" bits that correspond to the "1" bits of the input optical signal.

31. (Original) The system of claim 30 wherein the bits in the output signal are regenerated from the bits of the input optical signal.

32. (Original) The system of claim 30 wherein the bits in the output signal are reshaped bits from the input optical signal.

33. (Original) The system of claim 30 wherein the bits in the output signal are re-synchronized bits from the input optical signal.

34. (Original) The system of claim 30 wherein the bits in the output signal are re-amplified bits from the input optical signal.

35. (Original) A system for regenerating optical signals comprising:

a continuous wavelength (CW) laser;

an electro-absorption modulator (EAM) coupled to the CW laser, wherein a CW optical signal from the CW laser and an input optical signal counter-propagate in the EAM to create a chirped output signal; and

a filter coupled to the EAM wherein the filter passes the chirped output signal and blocks the CW optical signal.

36. (Original) A system for simultaneously regenerating a plurality of optical signals comprising:

a separate semiconductor optical amplifier (SOA) for receiving each of the plurality of optical signals;

a separate continuous wavelength (CW) laser coupled to each of the separate SOAs, each of the CW lasers providing a CW signal that counter-propagates with one of the optical signals in the SOA to produce a chirped output signal; and

an interleaver that receives the chirped output signal from each of the SOAs, wherein the interleaver passes each of the chirped output signals and blocks each of the CW signals.

37. (Original) The system of claim 36 further comprising:

a coupler coupled between the filter and each of the SOAs, wherein the coupler combines the chirped output signals and provides them to the filter.

38. (Original) The system of claim 36 wherein the separate CW lasers are tunable.

39. (Original) The system of claim 38 wherein wavelengths of the chirped output signals are determined by a wavelength selected for each of the corresponding tunable CW lasers.

40. (Original) The system of claim 38 wherein each of the CW signals are selected so that corresponding chirped output signals are passed by a passband of the interleaver.

41. (Original) An optical network comprising:
one or more incoming optical fibers connected to an optical regeneration device;
the optical regeneration device comprising:

a plurality of semiconductor optical amplifiers (SOA) for receiving a plurality of incoming optical signals on the one or more incoming optical fibers, wherein individual incoming optical signals are directed to each of the SOAs;

a separate continuous wavelength (CW) laser coupled to each of the SOAs, each of the CW lasers providing a CW signal that counter-propagates with the individual incoming optical signal in the SOA to produce a chirped output signal; and

an interleaver that receives the chirped output signals from each of the SOAs; and

one or more outgoing optical fibers connected to the interleaver, wherein the chirped output signals are passed to the one or more outgoing optical fibers by the interleaver and the CW signals are blocked from the outgoing optical fibers by the interleaver.

42. (Original) The optical network of claim 41 wherein the chirped output signals correspond to the incoming optical signals, and wherein the wavelengths of the chirped output signals have converted from the wavelength of the correspond incoming optical signals.

43. (Original) The optical network of claim 42 wherein the separate CW lasers are tunable to select the wavelength of the output signals.

44. (Original) The optical network of claim 41 further comprising:
a coupler coupling the plurality of SOAs to the interleaver.

45. (Original) The optical network of claim 41 further comprising:
an optical circulator coupling the plurality of SOAs to the interleaver and coupling the incoming optical signals from the one or more incoming optical fibers to the SOAs.

46. (Original) The optical network of claim 41 wherein the SOAs create a transient chirp in the respective CW signals, wherein the transient chirp corresponds to "1" bits in the incoming optical signals.

47. (Original) The optical network of claim 41 wherein each of the chirped output signals comprise regenerated bits from a corresponding incoming optical signal.

48. (Original) The optical network of claim 41 wherein each of the chirped output signals comprise reshaped bits from a corresponding incoming optical signal.

49. (Original) The optical network of claim 41 wherein each of the chirped output signals comprise re-amplified bits from a corresponding incoming optical signal.

50. (Original) The optical network of claim 41 wherein each of the chirped output signals comprise resynchronized bits from a corresponding incoming optical signal.

51. (Original) The optical network of claim 41 wherein each of the chirped output signals is at a same wavelength as a corresponding incoming optical signal.

52. (Original) A system for regenerating optical signals comprising:

means for counter-propagating the optical signal and a continuous wavelength (CW) signal;

means for creating a chirped output signal having bits that correspond to the "1" bits in the optical signal; and

means for filtering signals to a pass the chirped output signal and to block the CW signal.

53. (Original) The system of claim 52 wherein the counter-propagating means creates a transient chirp in the CW signal.

54. (Original) The system of claim 52 wherein the counter-propagating means creates an adiabatic chirp in the CW signal.

55. (Original) The system of claim 52 wherein the chirped output signal comprises regenerated bits from the optical signal.

56. (Original) The system of claim 52 wherein the chirped output signal comprises reshaped bits from the optical signal.

57. (Original) The system of claim 52 wherein the chirped output signal comprises re-amplified bits from the optical signal.

58. (Original) The system of claim 52 wherein the chirped output signal comprises resynchronized bits from the optical signal.

59. (Original) The system of claim 52 wherein the chirped output signal is at a same wavelength as the original optical signal.

60. (Original) The system of claim 52 wherein the chirped output signal is at a different wavelength than the original optical signal.

61. (Currently Amended) The system of claim ~~52~~ 60 wherein the wavelength of the chirped output signal is selected by tuning a means for producing the CW signal.

62. (Original) The system of claim 52 wherein the filter is a high pass filter

63. (Currently Amended) The system of claim ~~52~~ 62 wherein the high pass filter has a frequency response approximating a step function.

64. (Original) The system of claim 52 wherein the filter is an interleaver.

65. (Original) The system of claim 52 further comprising:

means for simultaneously filtering a plurality of chirped output signals in an interleaver, wherein the plurality of chirped output signals each have a different wavelength.